

TOP SECRET

25X1

P 060700Z
FM OPCEN

OUT 0133

6 APR 1963

PRIORITY

25X1

mult

AFSSO USAFE
AFSSO PACAF
YWQLAZC/AFSSO SAC
YWQLAZC/AFSSO FTD
YWQLAZC/AFSSO ACIC
YWQLAZC/AFSSO AFIC
YWQLAZC/AFSSO 8TH FOR 6594TH TEST SQD.
ZEM

HFS

CS

AGL

GFS

FILE

SECTION ONE OF THREE

T O P S E C R E T

SSOS PASS TO APPROPRIATE TCOS. CITE

OPCEN 5413. THE FOLLOWING INFORMATION IS FROM THE NATIONAL
PHOTOGRAPHIC INTERPRETATION CENTER. SUBJECT: CAMERA INFORMATION
FOR MISSION 9053.

1. THE FOLLOWING TECHNICAL INFORMATION NECESSARY FOR THE
REDUCTION OF QUANTITATIVE DATA OBTAINED FROM PHOTOGRAPHY OF MISSION
9053 IS FORWARDED FOR YOUR INFORMATION.

A. THIS PHOTOGRAPHY INVOLVES THE USE OF EIGHT CAMERAS:
TWO MAIN CAMERAS, FOUR HORIZON CAMERAS, FRAMING CAMERA AND A
STELLAR CAMERA.

B. OPERATIONAL FOCAL LENGTHS

	FWD UNIT	AFT UNIT
(1) MAIN LENS	609.628 MM	609.602 MM
(2) PORT HORIZON LENS	89.0 MM	89.2 MM
(3) STARBOARD HORIZON LENS	88.9 MM	89.9 MM
(4) STELLAR	83.58 MM	
(5) INDEX	38.23 MM	

DEFINITION: "OPERATIONAL FOCAL LENGTH" IS DEFINED AS THE DISTANCE
FROM THE MAIN LENS NODAL POINT TO THE FILM SURFACE AS MEASURED
ON THE LENS BENCH, AND THE DATA REDUCED FOR A VACUUM CONDITION.
(OPERATIONAL FOCAL LENGTH IS EQUIVALENT FOCAL LENGTH COORECTED FOR
ENVIRONMENT.)

C. LENS DISTORTION (PIN CUSHION)

	FWD UNIT	AFT UNIT
(1) MAIN LENS		
3 DEGREES	.003 MM	.002 MM
2 DEGREES	.003 MM	.001 MM
1 DEGREES	.001 MM	.000 MM
0 DEGREES	.000 MM	.000 MM
359 DEGREES	.002 MM	.000 MM
358 DEGREES	.004 MM	.001 MM
357 DEGREES	.007 MM	.002 MM
(2) PORT HORIZON CAMERA (RADICAL DISTORTION)		
10 DEGREES	.010 MM	.008 MM

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	20 DEGREES	.040	MM	.039	MM
	(TANGENTIAL DISTORTION)				
	MAXIMUM VECTOR	.010	MM	.010	MM
(3)	STARBOARD HORIZON CAMERA				
	(RADIAL DISTORTION)				
	10 DEGREES	.003	MM	.009	MM
	20 DEGREES	.038	MM	.043	MM
	(TANGENTIAL DISTORTION)				
	MAXIMUM VECTOR	.009	MM	.012	MM

D. DEPRESSION ANGLES OF HORIZON CAMERAS RELATIVE TO NOMINAL MAIN CAMERA.

- (1) FWD UNIT
 - A. PORT HORIZON CAMERA - 15 DEGREES 06' 45"
 - B. STARBOARD HORIZON CAMERA - 15 DEGREES 34' 17"
- (2) A. PORT HORIZON CAMERA - 15 DEGREES 10' 30"
 - B. STARBOARD HORIZON CAMERA - 14 DEGREES 55' 40"

E. FILTER AND EXPOSURE DATA

	FWD UNIT	AFT UNIT
(1) MAIN CAMERAS		
FILTER	WRATTEN 21	WRATTEN 21
APERTURE	F 3.5	F 3.5
SLIT WIDTH	.200"	.200"
(2) PORT HORIZON CAMERAS		
FILTER	WRATTEN 25	WRATTEN 2
APERTURE	F 6.8	F 6.8
EXPOSURE	1/100 SEC.	1/100 SEC.
(3) STARBOARD HORIZON CAMERAS		
FILTER	WRATTEN 25	WRATTEN 25
APERTURE	F 6.8	F 6.8
EXPOSURE	1/100 SEC.	1/100 SEC.
(4) STELLAR CAMERA		
FILTER	NONE	
APERTURE	F 1.9	
EXPOSURE	1/2 SEC.	
(5) INDEX CAMERA		
FILTER	WRATTEN 21	
APERTURE	F 4.5	
EXPOSURE	1/125 SEC.	

F. RESOLUTION CAPABILITIES

- (1) MAIN LENS
 - A. FWD UNIT - 136 (L/MM AVG)
 - B. AFT UNIT - 144 (L/MM AVG)
- (2) PORT HORIZON CAMERA
 - A. FWD UNIT - 36.9 (L/MM AVG)
 - B. AFT UNIT - 36.1 (L/MM AVG)
- (3) STARBOARD HORIZON CAMERA
 - A. FWD UNIT - 37.3 (L/MM AVG)
 - B. AFT UNIT - 37.6 (L/MM AVG)
- (4) INDEX CAMERA - 75.8 (L/MM AWAR)

G. TIMING MARKS

TIMING MARKS WILL APPEAR ON THE FILM. RATE OF TIMING MARKS WILL BE 200 CYCLES PER SECOND.

H. FILM DATA

1. MAIN CAMERAS - SP 132
2. HORIZON CAMERAS - SO 132
3. STELLAR CAMERA - SO 130 / SO 102
4. INDEX CAMERA - SO 206

I. CALIBRATED ANGLES OF CAMERA

1. CALIBRATED CONVERGENT ANGLE OF MAIN CAMERAS - 29 DEGREES 57.72 MIN.
2. CALIBRATED ANGLE BETWEEN FRAMING AND STELLAR CAMERAS - (NOT AVAILABLE AT THIS TIME)
3. STELLAR

X EQUAL PLUS .142 MM

Y EQUAL MINUS .069 MM

NOTE: VIEWING POSITIVE, EMULSION UP, COORDINATE SYSTEM IS DEFINED AS PLUS "Y" IS IN DIRECTION OF FLIGHT PLUS "X" IS TO THE LEFT AND PERPENDICULAR TO LINE OF FLIGHT.

(4) INDEX

X EQUAL MINUS .027 MM

Y EQUAL MINUS .027 MM

NOTE: VIEWING POSITIVE, EMULSION UP PLUS "X" IN DIRECTION OF FLIGHT AND MINUS "Y" TO THE RIGHT AND PERPENDICULAR TO DIRECTION OF FLIGHT.

J. CAMERA OPERATION DATA

PASS	CAMERA	CAMERA ON TIME			CYCLE PERIOD	
		(ZEBRA TIME)			CAMERA ON	CAMERA OFF
		DAY	HOUR	MIN.		
1A1	FWD	2	00	19	3.54	3.38
1A1	AFT	2	00	19	3.60	3.44
1D1	FWD	2	00	25	3.09	3.00
1D1	AFT	2	00	25	3.19	3.09
2A1	FWD	2	01	48	3.68	3.57
2A1	AFT	2	01	48	3.71	3.60
2D1	FWD	2	01	54	3.14	2.86
2D1	AFT	2	01	54	3.17	2.89
3D1	FWD	2	03	26	3.03	2.94
3D1	AFT	2	03	26	3.06	2.97
3D2	FWD	2	03	31	2.79	2.70
3D2	AFT	2	03	31	2.82	2.73
4D1	FWD	2	04	59	2.89	2.81
4D1	AFT	2	04	59	2.92	2.84
4D2	FWD	2	05	03	2.74	2.64
4D2	AFT	2	05	03	2.77	2.67
5D1	FWD	2	06	33	2.76	2.67

5D1	AFT	2	06	33	2.79	2.70
5D2	FWD	2	06	36	2.63	2.55
5D2	AFT	2	06	36	2.66	2.58
6D1	FWD	2	08	02	2.88	2.72
6D1	AFT	2	08	02	2.91	2.75
6D2	FWD	2	08	07	2.68	2.49
6D2	AFT	2	08	07	2.69	2.50
6D3	FWD	2	08	16	2.43	2.43
6D3	AFT	2	08	16	2.46	2.46
7D1	FWD	2	09	32	3.01	2.83
7D1	AFT	2	09	32	3.01	2.83
7D2	FWD	2	09	36	2.80	2.52
7D2	AFT	2	09	36	2.83	2.57
8D1	FWD	2	11	00	3.21	2.83
8D1	AFT	2	11	00	3.25	2.88
9D1	FWD	2	12	34	2.89	2.73
9D1	AFT	2	12	34	2.92	2.75
9D2	FWD	2	12	41	2.56	2.50
9D2	AFT	2	12	41	2.58	2.53
21D1	FWD	3	06	42	2.89	2.76
21D1	AFT	3	06	42	2.91	2.78
21D2	FWD	3	06	46	2.68	2.53
21D2	AFT	3	06	46	2.70	2.55
21D3	FWD	3	06	56	2.46	2.46
21D3	AFT	3	06	56	2.48	2.48
22D1	FWD	3	08	12	2.88	2.74
22D1	AFT	3	08	12	2.90	2.76
22D2	FWD	3	08	16	2.72	2.54
22D2	AFT	3	08	16	2.74	2.56
22D3	FWD	3	08	26	2.46	2.46
22D3	AFT	3	08	26	2.48	2.48
23D1	FWD	3	09	39	2.83	2.58
23D1	AFT	3	09	39	2.84	2.59
23D2	FWD	3	09	46	2.55	2.41
23D2	AFT	3	09	46	2.56	2.42
24D1	FWD	AFT CAMERA "MONO-MODE"				
24D1	AFT	3	11	13	2.82	2.55
35A1	FWD	4	03	39	3.84	3.56
35A1	AFT	4	03	39	3.87	3.60
35D1	FWD	4	03	50	2.83	2.68
35D1	AFT	4	03	50	2.83	2.68
39D1	FWD	4	09	49	3.05	2.55
39D1	AFT	4	09	49	3.09	2.59
40D1	FWD	4	11	22	2.85	2.63
40D1	AFT	FWD CAMERA "MONO-MODE"				

40D2 FWD 4 11 29 2.53 2.53
 40D2 AFT FWD CAMERA "MONO-MODE"
 NOTE: SCAN VELOCITY, INCHES PER SECOND EQUALS QTPMU Q DIVIDED BY THE
 CYCLE PERIOD IN SECONDS.
 IMAGE MOTION COMPENSATION VELOCITY INCHES PER SECOND AT CENTER
 OF FORMAT EQUALS 2.0251 DIVIDED BY CYCLE PERIOD IN SECONDS.
 K. TIME CORRELATION (READINGS IN MILLISECONDS)
 PASS SYSTEM BINARY CLK DELTA SYSTEM DELTA BINARY DIFFERENCE
 TIME TIME TIME TIME
 9 44143.614 71.632 62941.748 62941.773 .025
 25 44742.997 87071.007 86999.383 86999.375 -.008
 31 78871.649 121199.658 34128.652 34128.651 -.001
 41 45327.617 174055.627 52855.968 52855.969 -.001

SYSTEM TIME IS UNIVERSAL TIME EXPRESSED IN MILLISECONDS.

THIS DATA IF OFFERED FOR CORRELATION WITH PRELIMINARY EPHEMERIS
 I.E., BEST GUESS

L. COMBINING IMC AND PROGRAM TIME DATA NECESSITATES CHANGE
 IN FORMAT FROM THAT OF PREVIOUS MISSIONS.

2.MMM ACCORDING TO PRESENT DATA, THE FRAMING AND STELLAR CAMERAS
 OPERATED. COMPLETE CALIBRATION DATA WILL BE FORWARDED AS SOON AS IT
 IS MADE AVAILABLE. IT SHOULD BE NOTED THAT THIS VEHICLE DOES NOT HAVE
 THE ONE AND A HALF DEGREES OF BUILT IN PITCH.

M. DOMESTIC CAMERA OPERATION DATA
 CAMERA

PASS	CAMERA	CAMERA ON TIME			CYCLE PERIOD	
		DAY	HOUR	MIN.	CAMERA ON	CAMERA OFF
9A	FWD	2	12	15	4.92	4.80
9A	AFT	2	12	15	4.90	4.78
25A	FWD	3	12	25	4.09	4.00
25A	AFT	FWD "MONO-MODE"				
41A	FWD	4	12	35	4.53	4.47
41A	FWD	4	12	35	4.52	4.45

SCP-1

0900 0900

06/0740Z APR

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